REMARKS

By way of this Amendment, claim 11 has been amended, and claim 14 has been cancelled. Accordingly, claims 1-13 and 15-21 remain present in this application. Applicant respectfully requests re-examination and reconsideration of the present application.

Applicant would like to thank Examiner Carol Chaney for the courtesies extended to Applicant's attorney, Kevin Grzelak, during a telephonic interview conducted on August 8, 2000. During the interview, Applicant explained that the prior art to Mototani et al. does not teach or suggest use of expanded graphite having the claimed kerosene absorption range. The Examiner suggested that Applicant supply comparative data as evidence to show that the Mototani et al. reference does not teach the use of expanded graphite in an electrochemical cell having the claimed kerosene absorption range. Applicant attempted to have expanded graphite manufactured as described in Mototani et al. However, Applicant realized that the Mototani et al. reference does not adequately describe how to make the expanded graphite sufficient to enable one skilled in the art to make samples with a definite known kerosene absorption for testing. Accordingly, Applicant is unable to supply comparative data comparing the specific characteristics of expanded graphite manufactured according to Mototani et al. with the claimed characteristic(s) of the present invention. In lieu of comparative data, Applicant tested several samples of commercially available expanded graphite, and has filed, with this response, a Declaration under 37 C.F.R. §1.132 signed by the inventor of this application indicating the test results as evidence to show that the expanded graphite of Mototani et al. would not necessarily

exhibit the claimed characteristics. Applicant respectfully requests the Examiner to reconsider and allow the application for the reasons set forth herein.

In the present Office Action, claims 1-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mototani et al. (U.S. Patent No. 5,482,798). The reference to Mototani et al. discloses an alkaline battery having a positive electrode active material comprising manganese dioxide and electroconductive carbon material. The electroconductive carbon material in Mototani et al. comprises expanded graphite particles having an average particle size in the range of 0.5 to 15.0 micrometers, and used in the amount of 2 to 8 percent by weight based on the solids in the positive electrode active material. Column 3, lines 40-52 of Mototani et al. further discloses an example of a battery having electroconductive carbon material in the range of 0.5 to 30.0 micrometers, and expressly provides that the expanded graphite employed is a conventional expanded graphite.

In contrast, Applicant's claimed invention, as recited in claim 1, provides for an electrochemical cell comprising a positive electrode having an active material and an electrically conductive carbon material including expanded graphite particles having a kerosene absorption value in the range of 2.2 to 3.5 ml/g. Nowhere does Mototani et al. teach or suggest a kerosene absorption value in the claimed range. In fact, Mototani et al. does not provide any specific kerosene absorption characteristics, and thus does not teach or suggest the importance or desirability of Applicant's claimed kerosene absorption range. By employing an electrically conductive carbon having a kerosene absorption in the range of 2.2 to 3.5 ml/g, Applicant's cell advantageously achieves enhanced service performance as is shown in FIGS. 4 and 7. As is

particularly shown in FIG. 7, the average cell performance is significantly enhanced by employing expanded graphite having a kerosene absorption value within the claimed range of 2.2 to 3.5 ml/g, and provides the most noticeable advancement in service performance within the range of 2.7 to 3.1 ml/g. Applicant submits that these performance results are not achieved by a mere obvious optimization, as Mototani et al. does not discuss or even suggest the significance or advantage of employing expanded graphite having certain kerosene absorption characteristics in a cell.

With respect to the Examiner's responsive arguments stating that because the processes of forming expanded graphite disclosed by Applicant and the prior art are similar, the materials produced will be similar, and thus have similar physical properties, including kerosene absorption values, the Examiner has incorrectly assumed that Applicant's expanded graphite is identical in terms of the starting material and the process of making the expanded graphite, to that disclosed in Mototani et al. The Declaration sets forth evidence that there are existing expanded graphites that do not exhibit the claimed kerosene absorption, and thus it should be appreciated that the kerosene absorption properties of expanded graphite may vary from one sample to another. Factors which may determine the characteristics of expanded graphite include the starting graphite material and variances in the processing thereof, which can affect particle size, surface area, kerosene absorption, purity, and other characteristics of the expanded graphite. Applicant has discovered that by employing expanded graphite within the claimed kerosene absorption range in an electrochemical cell, enhanced service performance can be achieved. Applicant would like to further point out that the various samples of expanded graphite set forth

in FIG. 4 of the present application further support the position that different samples of expanded graphite exhibit different kerosene absorption characteristics.

The Declaration further states that one skilled in the art would not have inferred that the expanded graphite disclosed in Mototani et al. would have the claimed kerosene absorption, and the test results presented therein are proof of this position. Mototani et al. does not teach or suggest expanded graphite that would necessarily have the claimed kerosene absorption for use in electrochemical cells. Thus, Mototani et al. fails to teach or suggest each and every feature of the pending claims.

Further, Applicant's claim 16 provides an electrochemical cell having expanded graphite with an average particle size in the range of 17 to 32 micrometers, a d_{90} value in the range of 40 to 85 micrometers, a d_{10} value in the range of 3 to 9 micrometers, a kerosene absorption value in the range of 2.2 to 3.5 ml/g, a tap density in the range of 0.09 to 0.14 g/cc, and a Scott density of no greater than 0.07 g/ml. The reference to Mototani et al. likewise fails to teach or suggest a cell having a combination of the aforementioned features and, therefore, claim 16 should likewise be allowed in view of Mototani et al.

By way of the foregoing, Applicant has demonstrated that claims 1-13 and 15-21 are patentable in view of the Mototani et al. reference, and the claims should therefore be allowed, which allowance is respectfully requested.

In view of the above remarks, it is submitted that claims 1-13 and 15-21 define patentable subject matter and are in condition for allowance, which action is respectfully

solicited. If the Examiner has any questions regarding patentability of any of these claims, the Examiner is encouraged to contact Applicant's undersigned attorney to discuss the same.

Respectfully submitted,

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